EAST SIDE COASTAL RESILIENCY

SANDRESM2 | PROJECT AREA 2

AIR QUALITY MONITORING REPORT

Q2 | 2023

ISSUE DATE: APRIL 30, 2024
PERIOD COVERED: APRIL-JUNE 2023
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WITH DATA COLLECTED BY: DISTINCT ENGINEERING SOLUTIONS, INC.,
SUBCONSULTANT TO PERFETTO CONTRACTING CORPORATION

NYC DDC Department of Design and Construction

NEW YORK CITY DEPARTMENT OF DESIGN & CONSTRUCTION IN PARTNERSHIP WITH THE CITY OF NEW YORK

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PART 1

I. Air Quality Monitoring: Introduction

The East Side Coastal Resiliency (ESCR) project is a coastal protection initiative, jointly funded by the City of New York and the federal government, aimed at reducing flood risk due to coastal storms and sea level rise on Manhattan's East Side from East 25th Street to Montgomery Street. The ESCR project will protect 110,000 New Yorkers from the impacts of climate change by increasing resiliency for communities, properties, businesses, critical infrastructure, and public open spaces. In addition to providing flood protection, the project will strengthen and enhance waterfront spaces on Manhattan's East Side by improving accessibility, increasing ecological diversity, and delivering improved recreational amenities to a vibrant and highly diverse community.

The project is divided into three project areas: Project Area 1 (from Montgomery Street to East 15th Street, including East River Park), Project Area 2 (East 15th Street to East 25th Street, including Murphy Brothers Playground, Stuyvesant Cove Park, and Asser Levy Playground), and Parallel Conveyance (work to improve inland drainage on local streets between Montgomery Street and East 25th Street).

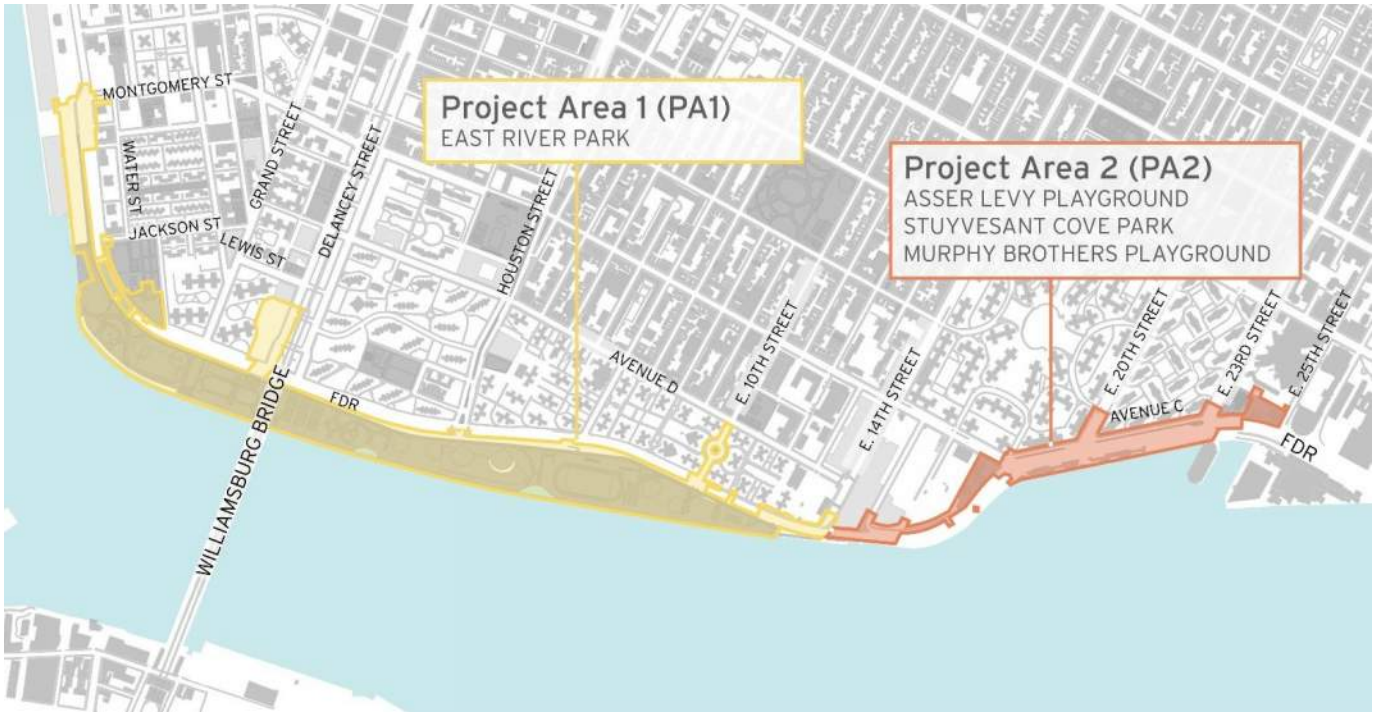


Fig.1 East Side Coastal Resiliency Project Areas

The ESCR team will be conducting air quality monitoring throughout construction in all three Project Areas to ensure the ongoing health and safety of the adjacent community. In particular, the ESCR Air Quality Monitoring (AQM) program will measure levels of Particulate Matter (PM) at two sizes: PM10 and PM2.5.

As described by the Environmental Protection Agency (EPA):

> PM stands for **particulate matter** (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope. Particle pollution includes:

- PM10: inhalable particles, with diameters that are generally 10 micrometers and smaller (typically from dust)
- PM2.5: fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller (typically from vehicle emissions)

The Clean Air Act (CAA) requires EPA to set national air quality standards for particulate matter, as one of the six criteria pollutants considered harmful to public health and the environment. The law also requires EPA to periodically review the standards to ensure that they provide adequate health and environmental protection, and to update those standards as necessary. National Ambient Air Quality Standards (NAAQS) for PM pollution specify a maximum amount of PM to be present in outdoor air.

The **Permissible Exposure Limit (PEL)** is a regulatory limit to protect public health/welfare set by the NAAQS in line with the requirements of the Clean Air Act on the amount or concentration of a substance in the air. The EPA has set a **24-hour time weighted average (TWA)** as standard for evaluating PM levels, meaning that they average potential PM exposure over a 24-hour period. This is also referred to as the **daily value**. In the line graphs presented in the ESCR monthly data plots, readings are averaged in 15-minute intervals and do not represent the standard TWA of 24-hrs. This more conservative approach will help the ESCR project team monitor the project's effect on air quality more closely.

The **Action Level (AL)** is lower than the PEL and represents a level set by the ESCR AQM Plan which, when reached, will alert the contractor that there has been an increase in particulate matter so that they can assess construction activities and take necessary measures to remediate the condition. Automated alerts are dispatched to the general contractor and the construction management team whenever the AL is exceeded.

The table here illustrates the PEL and AL for net PM2.5 and PM10 concentrations over a 24-hour TWA. These levels are measured in micrograms per cubic meter air ($\mu g/m^3$):

	Action Level (AL) over a 24-hour TWA	**Permissible Exposure Limit (PEL) over a 24-hour TWA**
PM2.5	25 $\mu g/ m^3$	35 $\mu g/ m^3$
PM10	100 $\mu g/ m^3$	150 $\mu g/ m^3$

The ESCR Final Environmental Impact Statement (FEIS) analyzed the potential impact of the construction on community air quality and determined that **with consistent air quality monitoring and application of measures to reduce pollutant emissions and suppress dust, "construction of the Preferred Alternative would not result in any predicted concentrations above the National Ambient Air Quality Standards (NAAQS)** for NO_2, CO, and PM10 or the de minimis thresholds for PM2.5 from nonroad and on-road sources. **Therefore, *no significant adverse air quality impacts are predicted* from the construction of the Preferred Alternative."** (ESCR FEIS, Chapter 6.10 Construction Air-Quality, 6.10-2)

Along with air quality monitoring, the contractor is required to take extensive preventative measures to control dust and limit vehicle emissions. Potential mitigation techniques include but are not limited to:

- use of water spray for roads, trucks, excavation areas and stockpiles
- use of anchored tarps to cover stockpiles
- use of truck covers during soil transport within site limits and during off-site transport
- employment of extra care during dry and/or high-wind periods

- use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface
- use of a truck wheel wash at site access/egress points to prevent fugitive dust and off-site migration of dust and other particulates

How to Read the Data Plots

The PM readings that follow by month in this report are shown in data plots, as below. The data plots illustrate **Net Particulate Matter (Net PM)** levels (blue line on data plot) in a **15-minute TWA.** As mentioned above, the federal limits for PM exposure are evaluated on a **24-hour TWA**. By evaluating PM readings on the 15-minute TWA, the ESCR project can ensure that Net PM never exceeds the 24-hour TWA, or daily value.

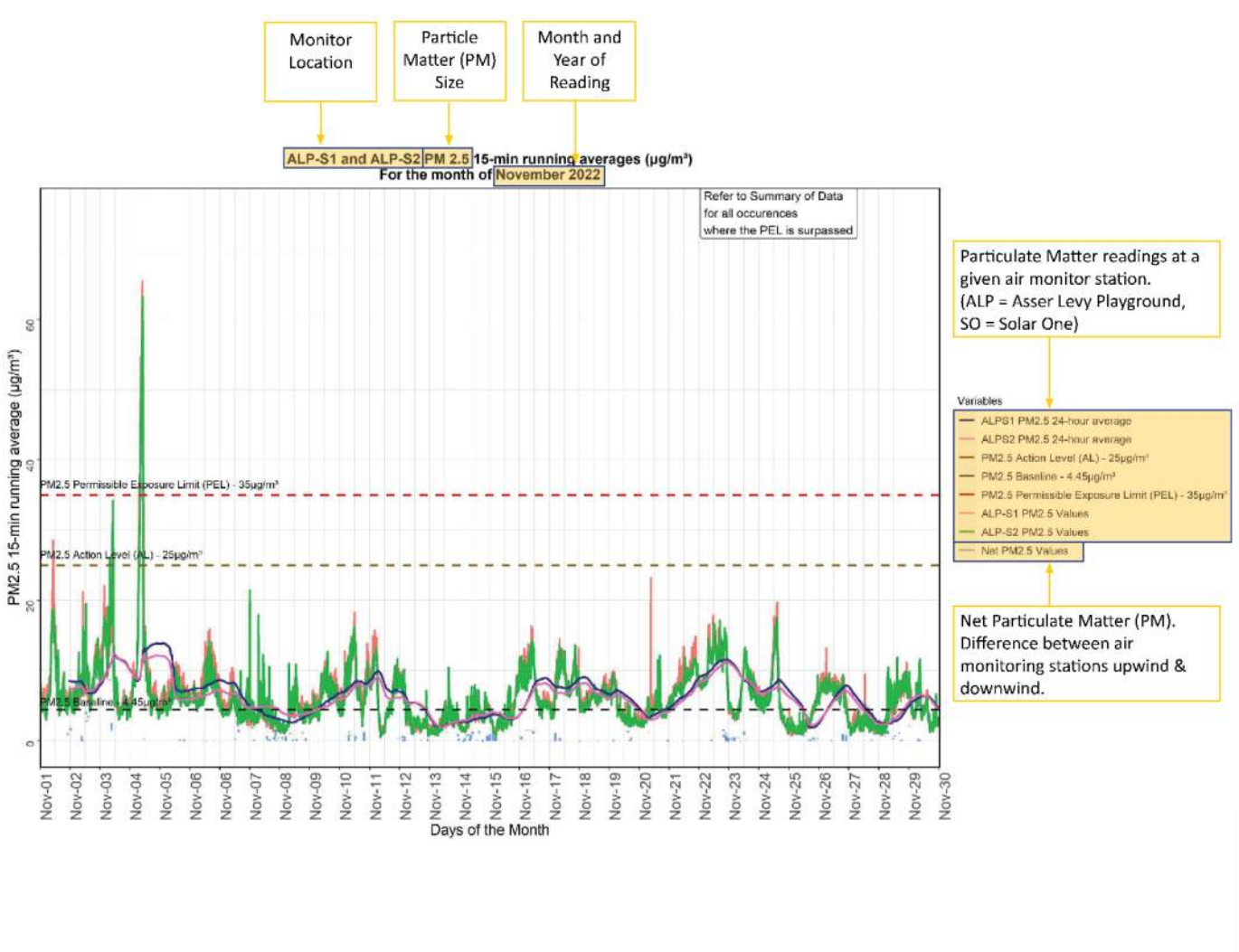


Fig.2 Sample Air Quality Data Plot

The **Net PM** readings are determined as the difference between the upwind and downwind monitoring stations as determined on any day given the wind speed and wind direction. At each construction location at least two air quality monitors are required to determine the Net PM. The Net PM value is important because it measures the **potential increase of particulate matter due to construction activities**. If the wind-speed is less than 0.5 meters per second, the downwind station is considered undetermined, and the Net PM will be absent from the data plot. In these circumstances, high readings at one or both monitoring stations will still be noted, however the increased levels in the PM readings may be due to conditions unrelated to construction.

And **exceedance** is a daily value that is above the level of the 24-hour time weighted average after rounding to the nearest 10 $\mu g/m^3$ (i.e., values ending in 5 or greater are to be rounded up).

An **exceptional event** is an uncontrollable event caused by natural sources of particulate matter or an event that is not expected to recur at a given location. Inclusion of such a value in the computation of exceedances or averages could result in inappropriate estimates of their respective expected annual values.

An **outlier** is a data point on a graph or in a set of results that is very much bigger or smaller than the next nearest data point. For example, outliers among monitoring data can be due to instrument malfunctions, the influence of harsh environments, and the limitation of measuring methods.

II. Executive Summary

This report summarizes the Particulate Matter (PM) readings for ESCR Project Area 2 (PA2), collected by Distinct Environmental Group, environmental subconsultant to the PA2 contractor, Perfetto Contracting Corporation (PCC), from January through March 2023. The PA2 contract requires a minimum of four (4) air quality monitoring stations throughout construction, which will be relocated as necessary to reflect the phased construction activities. Figure 3A details the location the air quality monitoring stations from January to March 21st, 2023.

Fig.3A ESCR Project Area 2 Phase 3 Air Quality Monitoring Station Locations, January – March 21st, 2023

Due to construction activities, by March 22nd, 2023 of this period, the SO-S4 monitor was relocated from East 23rd Street to an onsite location along the FDR and installed at the location shown below; the monitor began recording upon installation. Figure 3B details the updated locations of the air quality monitoring stations.

Fig.3B ESCR Project Area 2 Phase 3 Air Quality Monitoring Station Locations, as of March 22nd, 2023

Work Activities from April to June 2023:

- **Area 1: Stuyvesant Cove Park north of East 20th Street**
  - Landscape iron rail construction
- **Area 2: East 23rd Street Intersection at East Service Road/FDR Drive**
  - Floodwall, curb, and sidewalk construction
  - Floodgate #17 installation
- **Area 3: West Service Road between East 23rd and East 25th**
  - None
- **Area 4: Asser Levy Playground**
  - Floodwall and floodgate #18 installation
- **Area 5: East 18th Street at southbound FDR entrance ramp and Avenue C**
  - Sewer replacement
  - Floodwall construction
- **Area 6: Stuyvesant Cove Park south of East 20th Street**
  - Floodwall construction
- **Area 7: Murphy Brothers Playground**
  - Floodwall construction and pile installation
- **ConEd Facility north of 15th Street**
  - Sewer replacement

Though air quality is monitored 24/7, typical work hours during the period of this report were 7:00 am – 3:30 pm.

Summary of Air Quality Monitoring Reports

For the months of April - June 2023, construction-related levels of PM at both net PM2.5 and PM10 levels did not surpass Daily Permissible Exposure Limits (PEL) as set by federal standards for the 24-hour Time Weighted Average (TWA), or daily value, and did not cause air quality concerns to the public or on-site workers. The contractor, PCC, in conjunction with the contractor's environmental specialist, has successfully implemented mitigation techniques at both Action Levels as well as PEL (15-minute TWA) to suppress construction activity effects on air quality at throughout the Project Area 2 work-zone. Air quality impacts from construction activities as well as 24-hour TWA exceedances from Canadian wildfires were observed during multiple days in June 2023.

April 2023:

- PM2.5 levels surpassed the PEL (15-minute TWA) at ALP-S1 on April 5th, April 6th, and April 16th; ALP-S2 on April 6th, April 14th, April 16th, and April 27th; and SO-S4 on April 18th, April 22nd, April 25th, and April 28th.

- PM10 levels surpassed the PEL (15-minute TWA) at ALP-S2 on April 27th; SO-S3 on April 11th; and SO-S4 on April 18th and April 28th.

May 2023:

- PM2.5 levels surpassed the PEL (15-minute TWA) at ALP-S2 on May 10th, May 23rd, May 24th, May 27th, and May 30th; and SO-S4 on May 3rd, May 5th, May 6th, May 8th, May 10th, May 11th, May 12th, May 13th, May 15th, May 16th, May 17th, May 18th, May 19th, May 22nd, May 23rd, May 24th, May 25th, May 26th, and May 31st.

- PM10 levels surpassed the PEL (15-minute TWA) at SO-S4 on May 3rd, May 5th, May 8th, May 9th, May 10th, May 11th, May 12th, May 15th, May 16th, May 17th, May 18th, May 19th, May 22nd, May 23rd, May 24th, May 25th, May 26th, and May 31st.

June 2023*:

- PM2.5 levels surpassed the PEL (15-minute TWA) at ALP-S1 on June 5th, June 6th, June 7th, June 8th, June 11th, June 12th, June 17th, June 18th, June 25th, June 26th, June 29th and June 30th; ALP-S2 on June 1st, June 5th, June 6th, June 7th, June 8th, June 11th, June 17th, June 18th, June 25th, June 29th, and June 30th; SO-S3 on 6/6 for 1,068 minutes, 6/7 for 1,439 minutes, 6/8 for 639 minutes, 6/29 for 262 minutes, and 6/30 for 1,135 minutes; and SO-S4 on June 1st, June 2nd, June 3rd, June 5th, June 6th, June 7th, June 8th, June 9th, June 10th, June 12th, June 14th, June 16th, June 17th, June 19thm June 20th, June 21st, June 28th, June 29th, and June 30th.

- PM10 levels surpassed the PEL (15-minute TWA) at ALP-S1 on June 6th, June 7th, June 8th, and June 30th; ALP-S2 on June 6th, June 7th, June 8th, and June 30th; SO-S3 on June 6th, June 7th, June 29th, and June 30th; SO-S4 on June 2nd, June 6th, June 7th, June 9th, June 14th, June 17th, June 19th, June 20th, June 21st, June 28th, June 29th, and June 30th.

* Particulates from the Canadian wildfire impacted air quality city and state-wide and are discussed in the summary of the data for June 2023.

PART 2

Summary of Data April 2023

PM2.5 levels surpassed the PEL (15-minute TWA) at the following locations:

- ALP-S1 on 4/5 for 6 minutes, 4/6 for 292 minutes, and 4/16 for 79 minutes;
- ALP-S2 on 4/6 for 55 and 292 minutes, 4/14 for 80 minutes, 4/16 for 84 minutes, and 4/27 for 15 minutes; and
- SO-S4 on 4/18 for 15 minutes, 4/22 for 11 minutes; 4/25 for 15 minutes, and 4/28 for 21 minutes.

PM10 levels surpassed the PEL (15-minute TWA) at the following locations:

- ALP-S2 on 4/27 for 15 minutes;
- SO-S3 on 4/11 for 5 minutes; and
- SO-S4 on 4/18 for 15 minutes and 4/28 for 21 minutes.

<u>For the month of April 2023, PM net 2.5 and/or PM net 10 levels were exceeded on 4/5, 4/6, 4/11, 4/14, 4/16, 4/18, 4/22, 4/25, 4/27, and 4/28.</u>

For the month of April 2023, construction-related PM net 2.5 or 10 levels did not surpass Daily PEL (24-hour TWA).

PM 2.5 µg/m^3

- **ALP:** Elevated PM2.5 µg/m^3 levels were recorded on six occasions (4/5, 4/6, 4/14, 4/16, and 4/27) for between 6 and 292 minutes.
  - ALP-S1 is located on Avenue C and Avenue C Loop.
    - Elevated readings on 4/5 and 4/16 were related to offsite activities. No further actions were taken.
    - Elevated readings on 4/6 were related to onsite construction activities. Mitigation measures were enacted to control dust emissions.
  - ALP-S2 is located at the intersection of Avenue C and Avenue C Loop.
    - Elevated readings on 4/6, 4/14, and 4/27 were related to onsite construction activities. Mitigation measures were enacted to control dust emissions.
    - Elevated readings on 4/16 were related offsite activities. No further actions were taken.

- **SO:** Elevated PM2.5 µg/m^3 levels were recorded on four occasions (4/18, 4/22, 4/25, and 4/28) for between 11 and 21 minutes.
  - SO-S4 is located along the FDR between Murphy Brothers Playground and the ConEd facility.
    - Elevated readings on 4/18 and 4/28 were related to onsite construction activities. Mitigation measures were enacted to control dust emissions.
    - Elevated readings on 4/22 and 4/25 were related to offsite activities. No further actions were taken.

PM 10 µg/m^3

- **ALP:** Elevated PM10 µg/m^3 levels were recorded on one occasion (4/27) for 15 minutes.
  - ALP-S2 is located at the intersection of Avenue C and Avenue C Loop; elevated readings on 4/27 were related to onsite construction activities. Mitigation measures were enacted to control dust emissions.

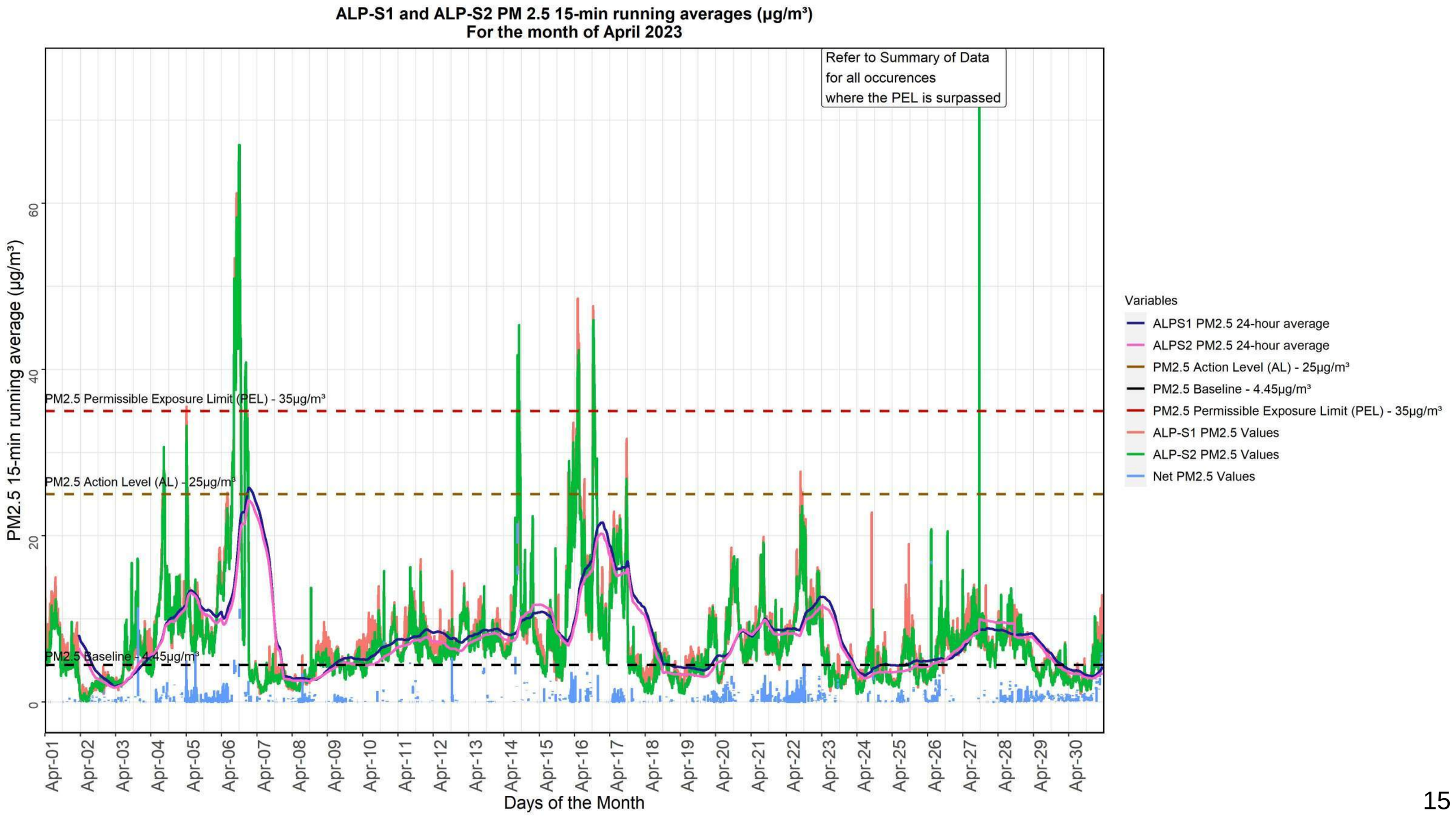
- **SO:** Elevated PM10 µg/m^3 levels were recorded on three occasions (4/11, 4/18, and 4/28) for between 5 and 21 minutes.

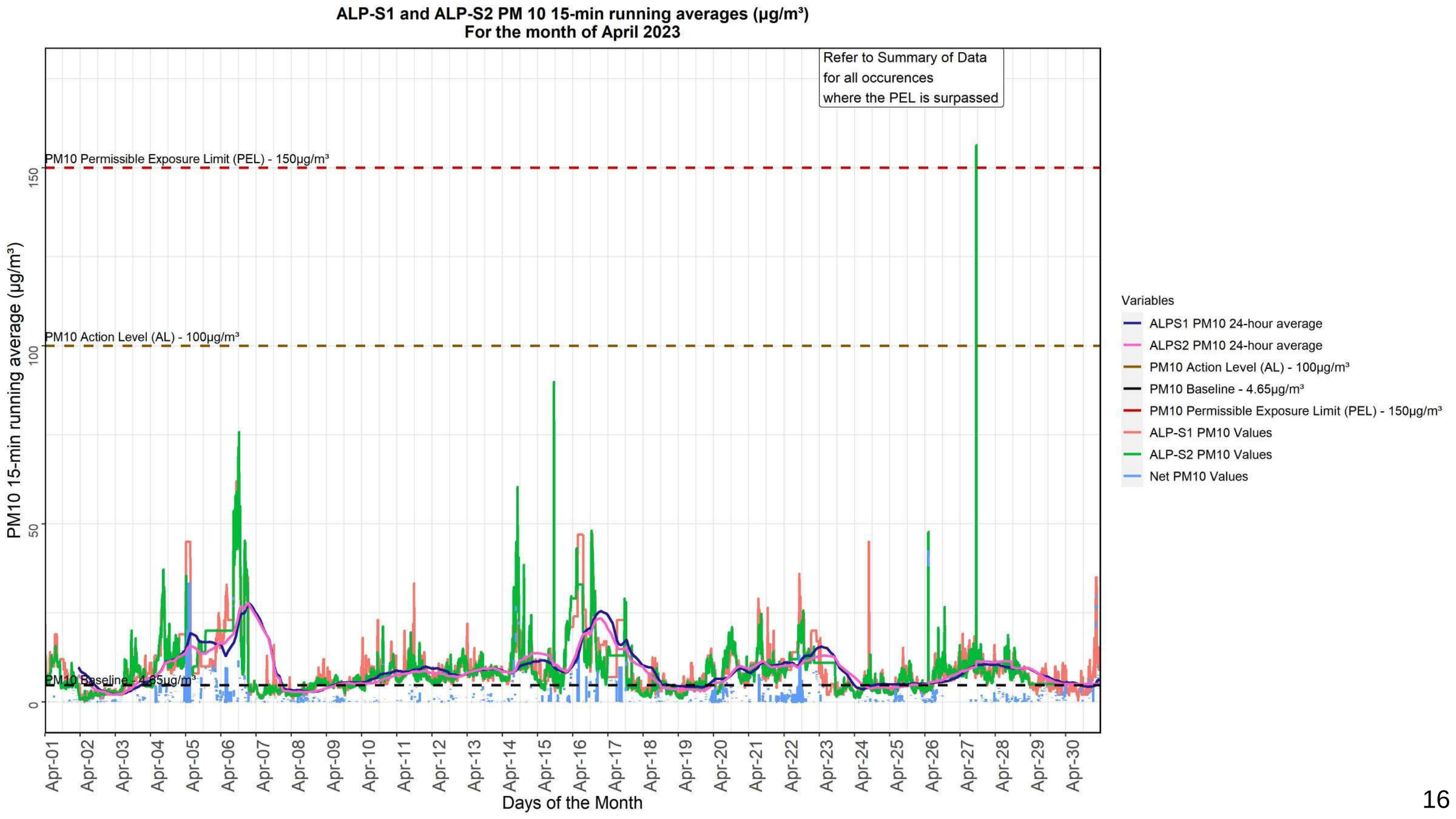
- SO-S3 is located at the intersection of Avenue C and East 20th Street; the elevated readings on 4/11 were related to onsite construction activities. Mitigation measures were enacted to control dust emissions.
- SO-S4 is located along the FDR between Murphy Brothers Playground and the ConEd facility; elevated readings on 4/18 and 4/28 were related to onsite construction activities. Mitigation measures were enacted to control dust emissions.

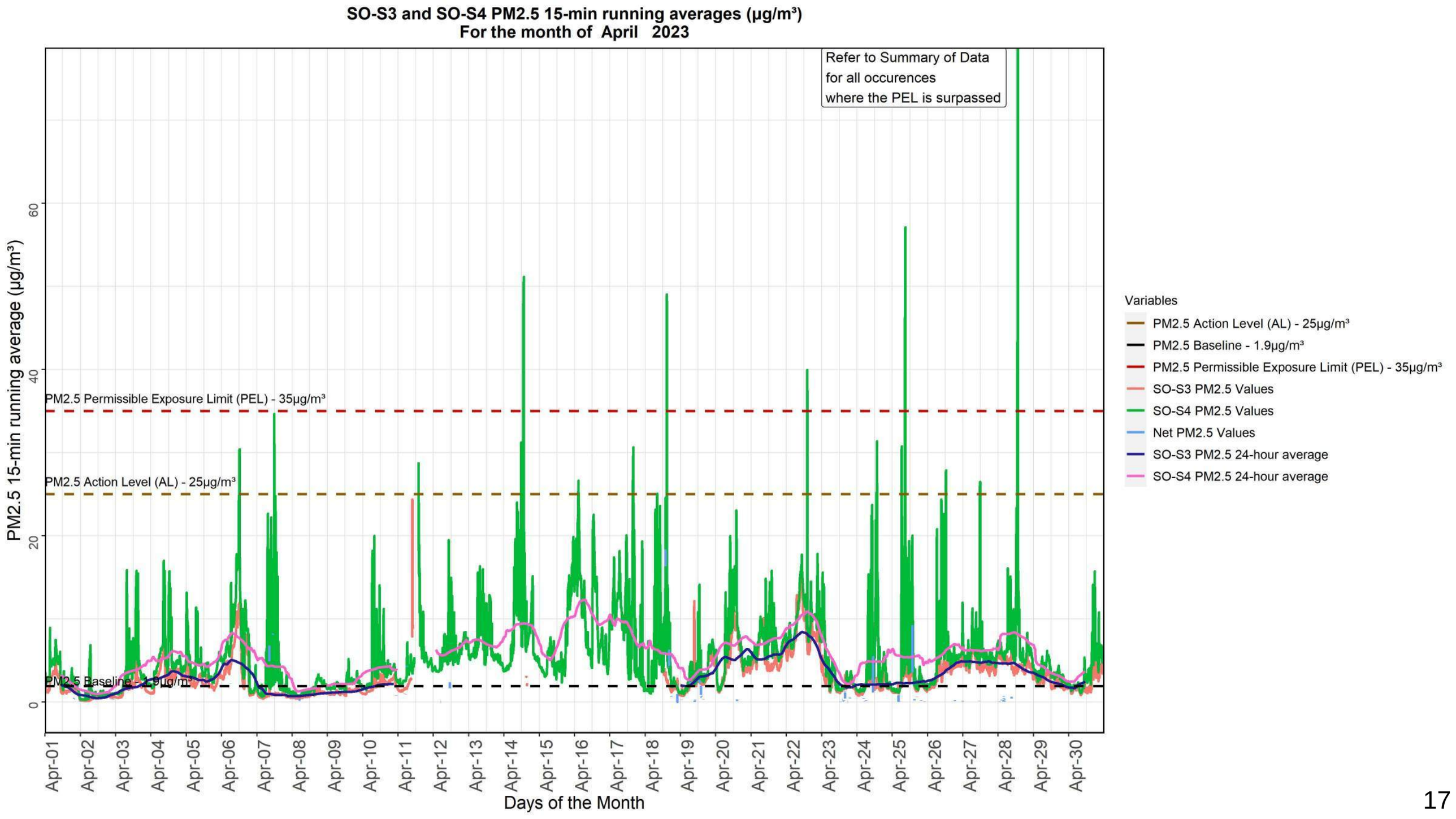
Mitigation Measures

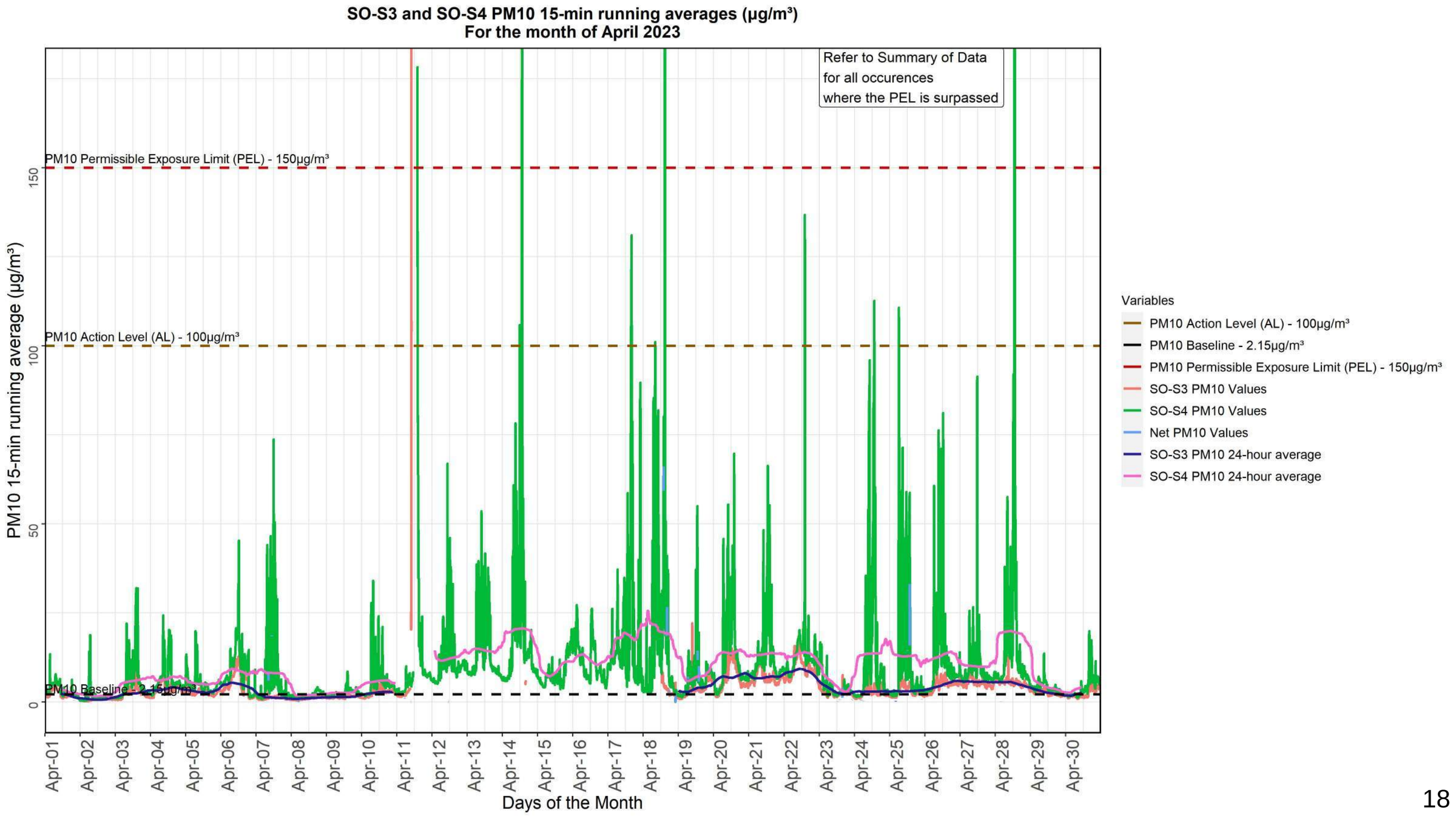
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

APRIL 2023 DATA PLOTS


ALP-S1 and ALP-S2 PM 2.5 15-min running averages (µg/m³)
For the month of April 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM2.5 15-min running average (µg/m³)
0
20
40
60
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 4.45µg/m³
Apr-01
Apr-02
Apr-03
Apr-04
Apr-05
Apr-06
Apr-07
Apr-08
Apr-09
Apr-10
Apr-11
Apr-12
Apr-13
Apr-14
Apr-15
Apr-16
Apr-17
Apr-18
Apr-19
Apr-20
Apr-21
Apr-22
Apr-23
Apr-24
Apr-25
Apr-26
Apr-27
Apr-28
Apr-29
Apr-30
Days of the Month
Variables
ALPS1 PM2.5 24-hour average
ALPS2 PM2.5 24-hour average
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 4.45µg/m³
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
ALP-S1 PM2.5 Values
ALP-S2 PM2.5 Values
Net PM2.5 Values


ALP-S1 and ALP-S2 PM 10 15-min running averages (µg/m³)
For the month of April 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 4.65µg/m³
PM10 15-min running average (µg/m³)
0
50
100
150
Apr-01
Apr-02
Apr-03
Apr-04
Apr-05
Apr-06
Apr-07
Apr-08
Apr-09
Apr-10
Apr-11
Apr-12
Apr-13
Apr-14
Apr-15
Apr-16
Apr-17
Apr-18
Apr-19
Apr-20
Apr-21
Apr-22
Apr-23
Apr-24
Apr-25
Apr-26
Apr-27
Apr-28
Apr-29
Apr-30
Days of the Month
Variables
ALPS1 PM10 24-hour average
ALPS2 PM10 24-hour average
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 4.65µg/m³
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
ALP-S1 PM10 Values
ALP-S2 PM10 Values
Net PM10 Values


SO-S3 and SO-S4 PM2.5 15-min running averages (µg/m³)
For the month of April 2023
Refer to Summary of Data for all occurences where the PEL is surpassed
PM2.5 15-min running average (µg/m³)
0
20
40
60
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 1.9µg/m³
Apr-01
Apr-02
Apr-03
Apr-04
Apr-05
Apr-06
Apr-07
Apr-08
Apr-09
Apr-10
Apr-11
Apr-12
Apr-13
Apr-14
Apr-15
Apr-16
Apr-17
Apr-18
Apr-19
Apr-20
Apr-21
Apr-22
Apr-23
Apr-24
Apr-25
Apr-26
Apr-27
Apr-28
Apr-29
Apr-30
Days of the Month
Variables
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 1.9µg/m³
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
SO-S3 PM2.5 Values
SO-S4 PM2.5 Values
Net PM2.5 Values
SO-S3 PM2.5 24-hour average
SO-S4 PM2.5 24-hour average


SO-S3 and SO-S4 PM10 15-min running averages (µg/m³)
For the month of April 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 2.15µg/m³
PM10 15-min running average (µg/m³)
0
50
100
150
Apr-01
Apr-02
Apr-03
Apr-04
Apr-05
Apr-06
Apr-07
Apr-08
Apr-09
Apr-10
Apr-11
Apr-12
Apr-13
Apr-14
Apr-15
Apr-16
Apr-17
Apr-18
Apr-19
Apr-20
Apr-21
Apr-22
Apr-23
Apr-24
Apr-25
Apr-26
Apr-27
Apr-28
Apr-29
Apr-30
Days of the Month
Variables
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 2.15µg/m³
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
SO-S3 PM10 Values
SO-S4 PM10 Values
Net PM10 Values
SO-S3 PM10 24-hour average
SO-S4 PM10 24-hour average

Summary of Data May 2023

PM2.5 levels surpassed the PEL (15-minute TWA) at the following locations:

- ALP-S2 on 5/10 for 163 minutes, 5/23 for 15 minutes, 5/24 for 14 minutes, 5/27 for 15 minutes, and 5/30 for 116 minutes; and
- SO-S4 on 5/3 for 12 minutes, 5/5 for 129 minutes, 5/6 for 5 minutes, 5/8 for 231 minutes, 5/10 for 14 minutes, 17 minutes, and 40 minutes, 5/11 for 740 minutes and 736 minutes, 5/12 for 756 minutes, 760 minutes, and 733 minutes, 5/13 for 734 minutes; 5/15 for 39 minutes, 5/16 for 166 minutes, 5/17 for 87 minutes, 73 minutes, and 1 minutes, 5/18 for 726 minutes, 67 minutes, and 85 minutes, 5/19 for 30 minutes, 125 minutes, and 178 minutes, 5/22 for 205 minutes, 5/23 for 118 minutes, 5/24 for 60 minutes, 87 minutes, and 68 minutes, 5/25 for 3 minutes, 5/26 for 29 minutes and 105 minutes, and 5/31 for 15 minutes, 27 minutes, and 54 minutes.

PM10 levels surpassed the PEL (15-minute TWA) at the following location:

- SO-S4 on 5/3 for 12 minutes, 5/5 for 129 minutes, 5/8 for 231 minutes, 5/9 for 182 minutes, 5/10 for 17 minutes and 40 minutes, 5/11 for 740 minutes and 736 minutes, 5/12 for 756 minutes, 760 minutes, and 733 minutes, 5/15 for 39 minutes, 5/16 for 166 minutes, 5/17 for 87 minutes, and 73 minutes, 5/18 for 726 minutes, 67 minutes, and 85 minutes, 5/19 for 30 minutes, 125 minutes, and 178 minutes, 5/22 for 205 minutes, 5/23 for 118 minutes, 5/24 for 60 minutes, 87 minutes, and 68 minutes, 5/25 for 3 minutes and 87 minutes, 5/26 for 29 minutes and 105 minutes, and 5/31 for 15 minutes, 27 minutes, and 54 minutes.

<u>For the month of May 2023, PM net 2.5 and/or PM net 10 levels were exceeded on 5/3, 5/5, 56, 5/8, 5/9, 5/10, 5/11, 5/12, 5/13, 5/15, 5/16, 5/17, 5/18, 5/19, 5/22, 5/23, 5/24, 5/25, 5/26, 5/27, 5/30, and 5/31.</u>

For the month of May 2023, construction-related PM net 2.5 surpassed the Daily PEL (24-hour TWA), PM net 10 did not surpass the Daily PEL (24-hour TWA).

PM 2.5 µg/m^3

- **ALP:** Elevated PM2.5 µg/m^3 levels were recorded on six occasions (4/5, 4/6, 4/14, 4/16, and 4/27) for between 14 and 163 minutes.
  - ALP-S2 is located at the intersection of Avenue C and Avenue C Loop.
    - Elevated readings on 5/10 and 5/23 were related to onsite construction activities. Mitigation measures were enacted to control dust emissions.
    - Elevated readings on 5/24, 5/27, and 5/30 were related offsite activities. No further actions were taken.

- **SO:** Elevated PM2.5 µg/m^3 levels were recorded on 36 occasions (5/3, 5/5, 5/6, 5/8, 5/9, 5/10, 5/11, 5/12, 5/13, 5/15, 5/16, 5/17, 5/18, 5/19, 5/22, 5/23, 5/24, 5/25, 5/26, and 5/31) for between 1 and 760 minutes.
  - SO-S4 is located along the FDR between Murphy Brothers Playground and the ConEd facility.
    - Elevated readings on 5/3, 5/5, 5/6, 5/8, 5/9, 5/10, 5/11, 5/12, 5/13, 5/15, 5/16, 5/17, 5/18, 5/19, 5/22, 5/23, 5/24, 5/25, 5/26, and 5/31 were related to onsite construction activities. Mitigation measures were enacted to control dust emissions.
    - Elevated readings on 5/10, 5/17, 5/26, and 5/31 were related to offsite activities. No further actions were taken.

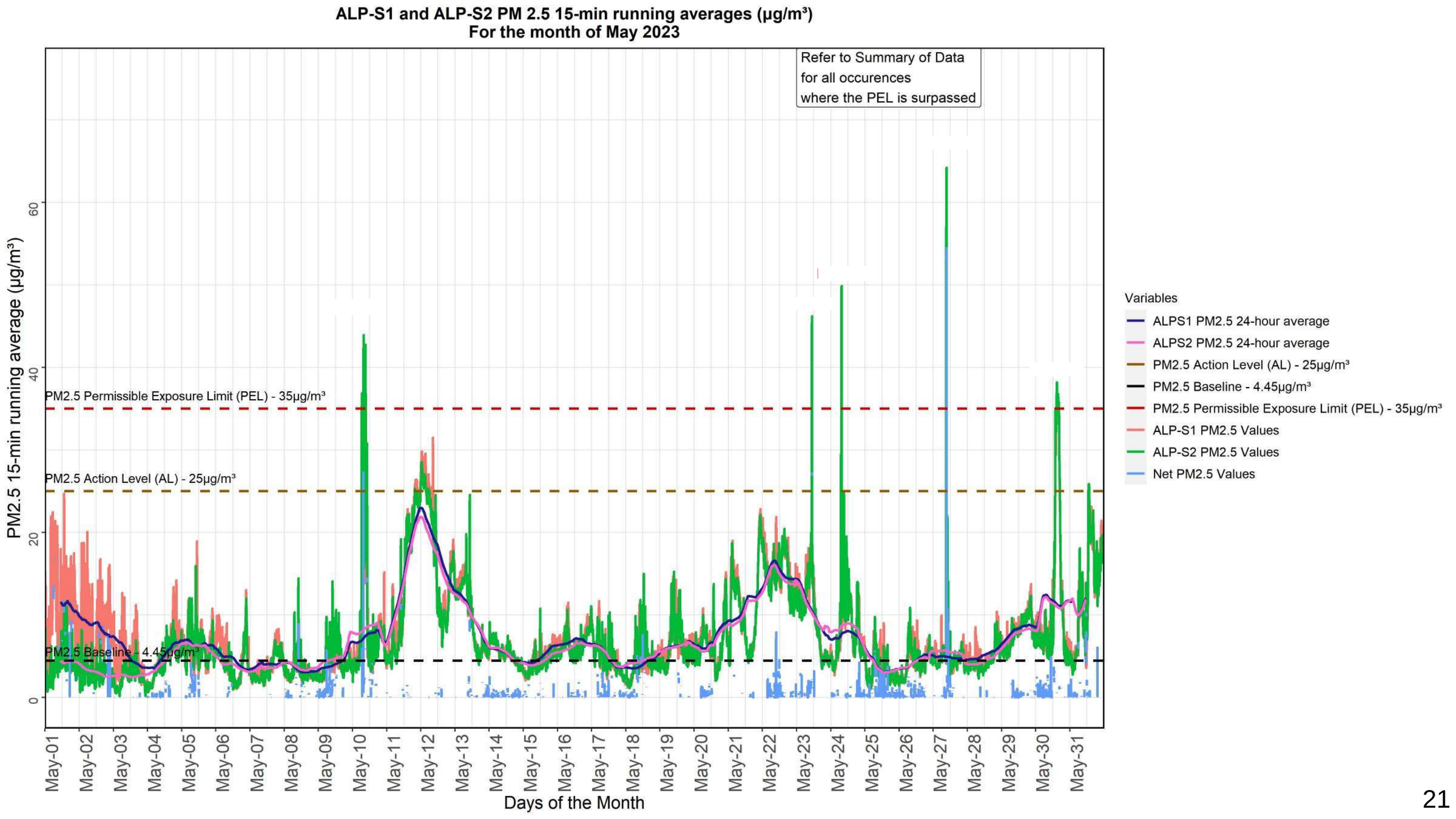
PM 10 µg/m^3

- **SO:** Elevated PM10 µg/m^3 levels were recorded on 32 occasions (5/3, 5/5, 5/8, 5/9, 5/10, 5/11, 5/12, 5/15, 5/16, 5/17, 5/18, 5/19, 5/22, 5/23, 5/24, 5/25, 5/26, and 5/31) for between 3 and 760 minutes.
    - SO-S4 is located along the FDR between Murphy Brothers Playground and the ConEd facility.
        - Elevated readings on 5/3, 5/5, 5/8, 5/9, 5/10, 5/11, 5/12, 5/15, 5/16, 5/17, 5/18, 5/19, 5/22, 5/23, 5/24, 5/25, 5/26, and 5/31 were related to onsite construction activities. Mitigation measures were enacted to control dust emissions.
        - Elevated readings on 5/26 and 5/31 were related to offsite activities. No further actions were taken.

Mitigation Measures

- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

MAY 2023 DATA PLOTS


ALP-S1 and ALP-S2 PM 2.5 15-min running averages (µg/m³)
For the month of May 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM2.5 15-min running average (µg/m³)
0
20
40
60
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 4.45µg/m³
May-01
May-02
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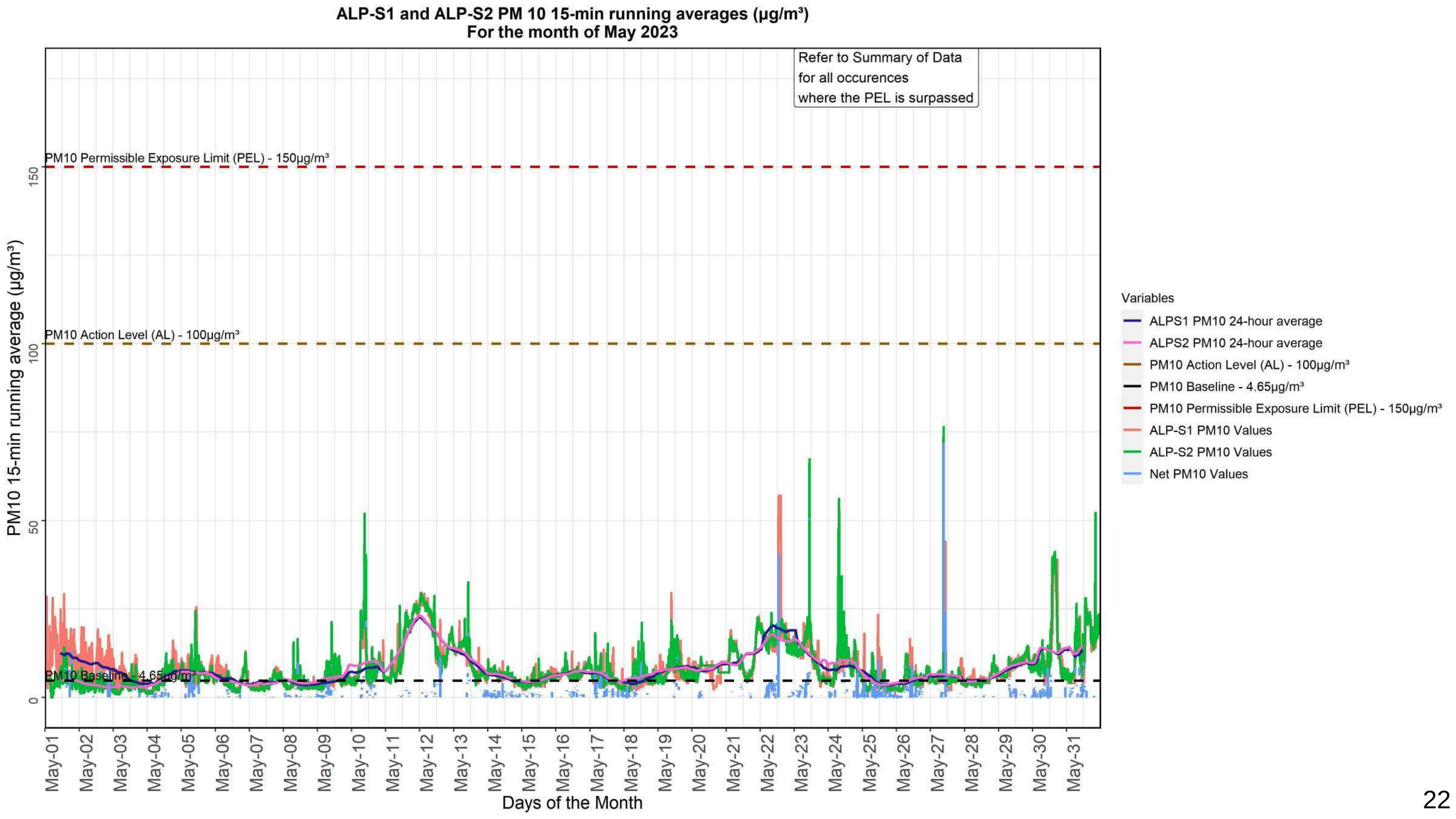
May-27
May-28
May-29
May-30
May-31
Days of the Month
Variables
ALPS1 PM2.5 24-hour average
ALPS2 PM2.5 24-hour average
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 4.45µg/m³
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
ALP-S1 PM2.5 Values
ALP-S2 PM2.5 Values
Net PM2.5 Values


ALP-S1 and ALP-S2 PM 10 15-min running averages (µg/m³)
For the month of May 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 4.65µg/m³
PM10 15-min running average (µg/m³)
0
50
100
150
May-01
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May-04
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May-07
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May-12
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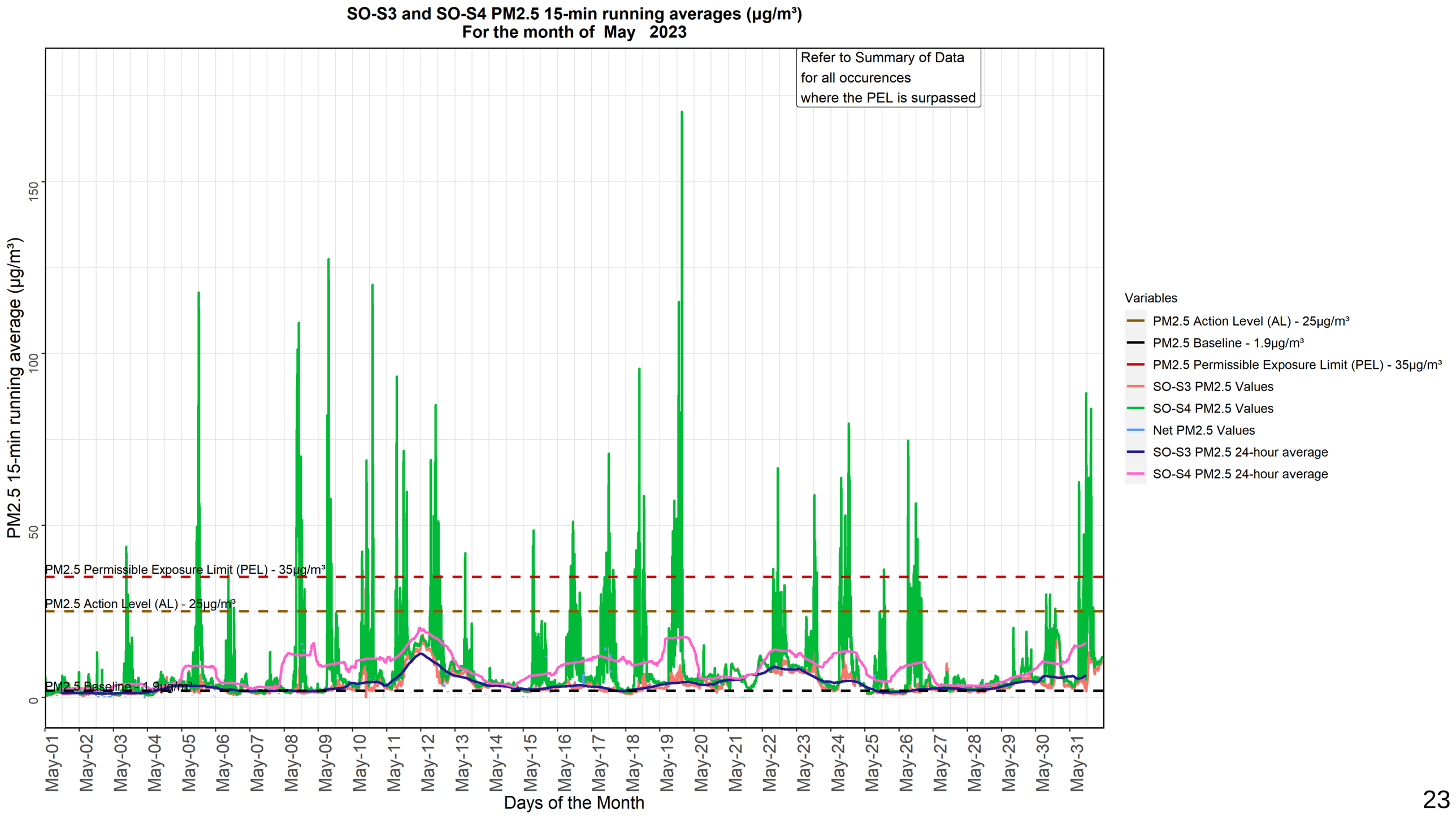
May-28
May-29
May-30
May-31
Days of the Month
Variables
ALPS1 PM10 24-hour average
ALPS2 PM10 24-hour average
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 4.65µg/m³
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
ALP-S1 PM10 Values
ALP-S2 PM10 Values
Net PM10 Values


SO-S3 and SO-S4 PM2.5 15-min running averages (µg/m³)
For the month of May 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM2.5 15-min running average (µg/m³)
0
50
100
150
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 1.9µg/m³
May-01
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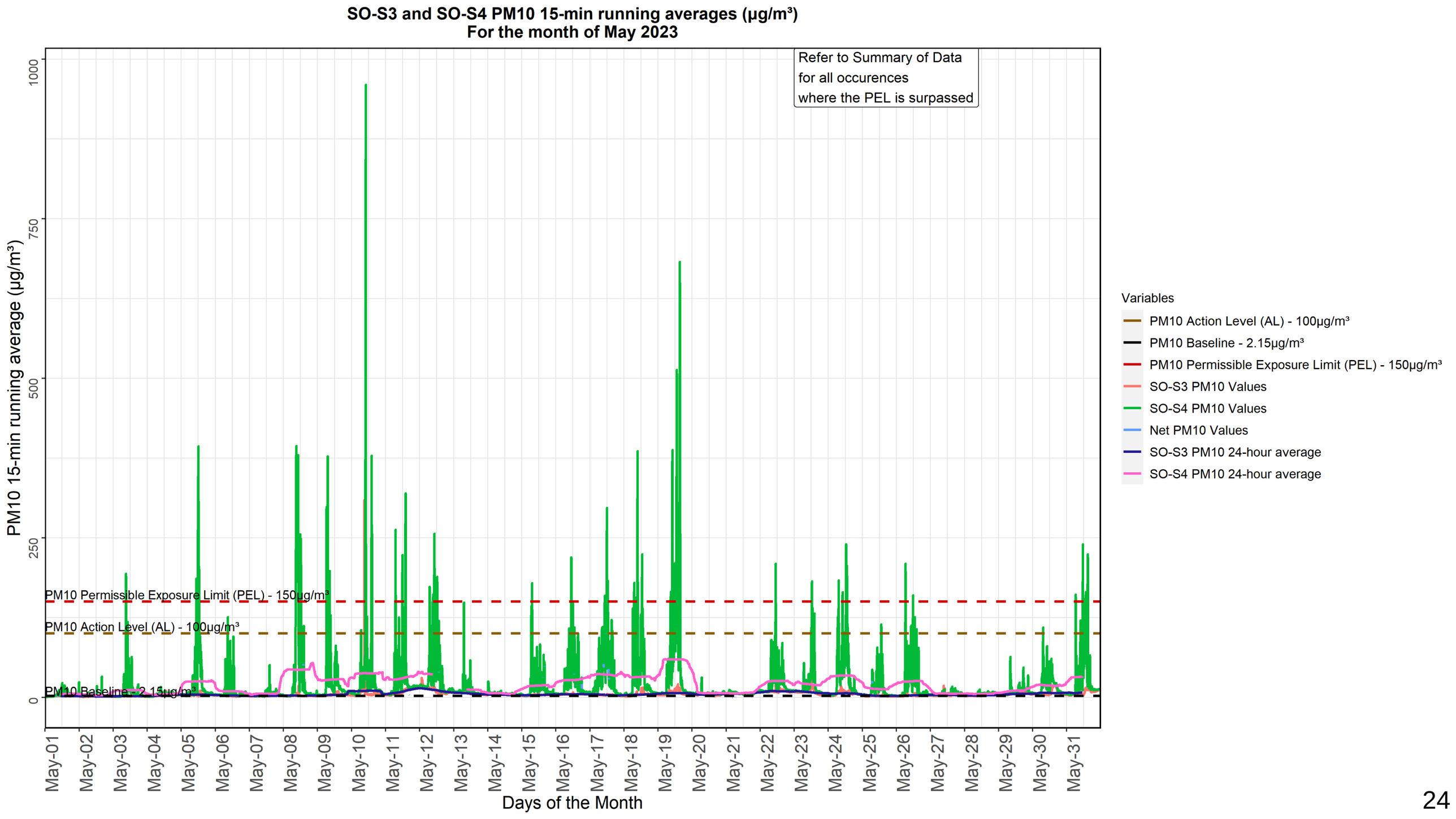
May-31
Days of the Month
Variables
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 1.9µg/m³
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
SO-S3 PM2.5 Values
SO-S4 PM2.5 Values
Net PM2.5 Values
SO-S3 PM2.5 24-hour average
SO-S4 PM2.5 24-hour average


SO-S3 and SO-S4 PM10 15-min running averages (µg/m³)
For the month of May 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM10 15-min running average (µg/m³)
1000
750
500
250
0
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 2.15µg/m³
May-01
May-02
May-03
May-04
May-05
May-06
May-07
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May-31
Days of the Month
Variables
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 2.15µg/m³
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
SO-S3 PM10 Values
SO-S4 PM10 Values
Net PM10 Values
SO-S3 PM10 24-hour average
SO-S4 PM10 24-hour average

Summary of Data June 2023

Impacts from Canadian wildfires surpassing the PM2.5 and PM10 PEL were observed during multiple days surpassing the 24-hour TWA during the month of June 2023 (discussed further below).

PM2.5 levels surpassed the PEL (15-minute TWA) at the following locations:

- ALP-S1 on 6/5 for 199 minutes, 6/6 for 1,439 minutes, 6/7 for 1,439 minutes, 6/8 for 1,271 minutes, 6/11 for 97 minutes, 6/12 for 7 minutes, 6/17 for 446 minutes, 6/18 for 143 minutes, 6/25 for 89 minutes, 6/26 for 9 minutes, 6/29 for 1,202 minutes, and 6/30 for 1,379 minutes.
- ALP-S2 on 6/1 for 15 minutes, 6/5 for 199 minutes, 6/6 for 1,439 minutes, 6/7 for 1,439 minutes, 6/8 for 1,271 minutes, 6/11 for 97 minutes, 6/17 for 446 minutes, 6/18 for 143 minutes, 6/25 for 89 minutes, 6/29 for 1,202 minutes, and 6/30 and 1,379 minutes
- SO-S3 on 6/6 for 1,068 minutes, 6/7 for 1,439 minutes, 6/8 for 639 minutes, 6/29 for 262 minutes, and 6/30 for 1,135 minutes; and
- SO-S4 on 6/1 for 514 minutes, 6/2 for 266 minutes, 6/3 for 4 minutes, 6/5 for 160 minutes, 6/6 for 1,068 minutes, 6/7 for 1,439 minutes, 6/8 for 639 minutes, 6/9 for 287 minutes, 6/10 for 6 minutes, 6/12 for 1 minute, 6/14 for 54 minutes, 6/16 for 241 minutes, 6/17 for 155 minutes, 6/19 for 161 minutes, 6/20 for 40 minutes, 6/21 for 56 minutes, 6/28 for 33 minutes, 6/29 for 262 minutes, and 6/30 for 1,135 minutes.

PM10 levels surpassed the PEL (15-minute TWA) at the following locations:

- ALP-S1 on 6/6 for 1,439 minutes, 6/7 for 1,439 minutes, 6/8 for 1,271 minutes, and 6/30 for 1,379 minutes;
- ALP-S2 on 6/6 for 1,439 minutes, 6/7 for 1,439 minutes, 6/8 for 1,271 minutes, and 6/30 for 1,379 minutes;
- SO-S3 on 6/6 for 1,068 minutes, 6/7 for 1,439 minutes, 6/29 for 262 minutes, and 6/30 for 1,135 minutes; and
- SO-S4 on 6/2 for 266 minutes, 6/6 for 1,068 minutes, 6/7 for 1,439 minutes, 6/9 for 287 minutes, 6/14 for 54 minutes, 6/17 for 155 minutes, 6/19 for 161 minutes, 6/20 for 40 minutes, 6/21 for 56 minutes, 6/28 for 33 minutes, 6/29 for 262 minutes, and 6/30 for 1,135 minutes.

For the month of June 2023, PM net 2.5 and/or PM net 10 levels were exceeded on 6/1, 6/2, 6/3, 6/5, 6/6, 6/7, 6/8, 6/10, 6/11, 6/12, 6/14, 6/16, 6/17, 6/18, 6/19, 6/20, 6/21, 6/25, 6/26, 6/28, 6/29, and 6/30.

For the month of June 2023, construction-related PM net 2.5 or 10 levels did not surpass Daily PEL (24-hour TWA).

PM 2.5 µg/m^3

- **ALP:** Elevated PM2.5 µg/m^3 levels were recorded on 23 occasions (6/1, 6/5, 6/6, 6/7, 6/8, 6/11, 6/12, 6/17, 6/18, 6/25, 6/26, 6/29, and 6/30) for between 7 and 1,439 minutes.
  - ALP-S1 is located on Avenue C and Avenue C Loop; elevated readings on 6/5, 6/6, 6/7, 6/8, 6/11, 6/12, 6/17, 6/18, 6/25, 6/26, 6/29, and 6/30 were related to air quality impacts from Canadian wildfires.
  - ALP-S2 is located at the intersection of Avenue C and Avenue C Loop
    - Elevated readings on 6/5, 6/6, 6/7, 6/8, 6/11, 6/17, 6/18, 6/25, 6/29, and 6/30 were related to air quality impacts from Canadian wildfires.
    - Elevated readings on 6/1 were related to offsite activities.

- **SO:** Elevated PM2.5 µg/m^3 levels were recorded on 24 occasions (6/1, 6/2, 6/3, 6/5, 6/6, 6/7, 6/8, 6/9, 6/10, 6/12, 6/14, 6/16, 6/17, 6/19, 6/20, 6/21, 6/28, 6/29, and 6/30) for between 1 and 1,439 minutes.
  - SO-S3 is located at the intersection of Avenue C and East 20th Street; elevated readings on 6/6, 6/7, 6/8, 6/29, and 6/30 were related to air quality impacts from Canadian wildfires.
  - SO-S4 is located along the FDR between Murphy Brothers Playground and the ConEd facility.
    - Elevated readings on 6/1, 6/2, and 6/3 were related to offsite activities.
    - Elevated readings on 6/5, 6/6, 6/7, 6/8, 6/9, 6/17, 6/19, 6/28, 6/29, and 6/30 were related to air quality impacts from Canadian wildfires.
    - Elevated readings on 6/10, 6/12, 6/14, 6/16, 6/20, and 6/21 were related to construction activities. Mitigation measures were enacted to control dust emissions.

PM 10 µg/m^3

- **ALP:** Elevated PM10 µg/m^3 levels were recorded on eight occasions (6/6, 6/7, 6/8, and 6/30) for between 1,271 and 1,439 minutes.
  - ALP-S1 is located on Avenue C and Avenue C Loop; elevated readings on 6/6, 6/7, 6/8, and 6/30 were related to air quality impacts from Canadian wildfires.
  - ALP-S2 is located at the intersection of Avenue C and Avenue C Loop; elevated readings on 6/6, 6/7, 6/8, and 6/30 were related to air quality impacts from Canadian wildfires.

- **SO:** Elevated PM10 µg/m^3 levels were recorded on 16 occasions 6/2, 6/6, 6/7, 6/9, 6/14, 6/17, 6/19, 6/20, 6/21, 6/28, 6/29, and 6/30) for between 33 and 1,439 minutes.
  - SO-S3 is located at the intersection of Avenue C and East 20th Street; elevated readings on 6/6, 6/7, 6/8, and 6/30 were related to air quality impacts from Canadian wildfires.
  - SO-S4 is located along the FDR between Murphy Brothers Playground and the ConEd facility.
    - Elevated readings on 6/6, 6/7, 6/9, 6/29, and 6/30 were related to air quality impacts from Canadian wildfires.
    - Elevated readings on 6/2, 6/17 and 6/19 were related to offsite activity.
    - Elevated readings on 6/20, 6/21, and 6/28 were related to construction activities. Mitigation measures were enacted to control dust emissions.

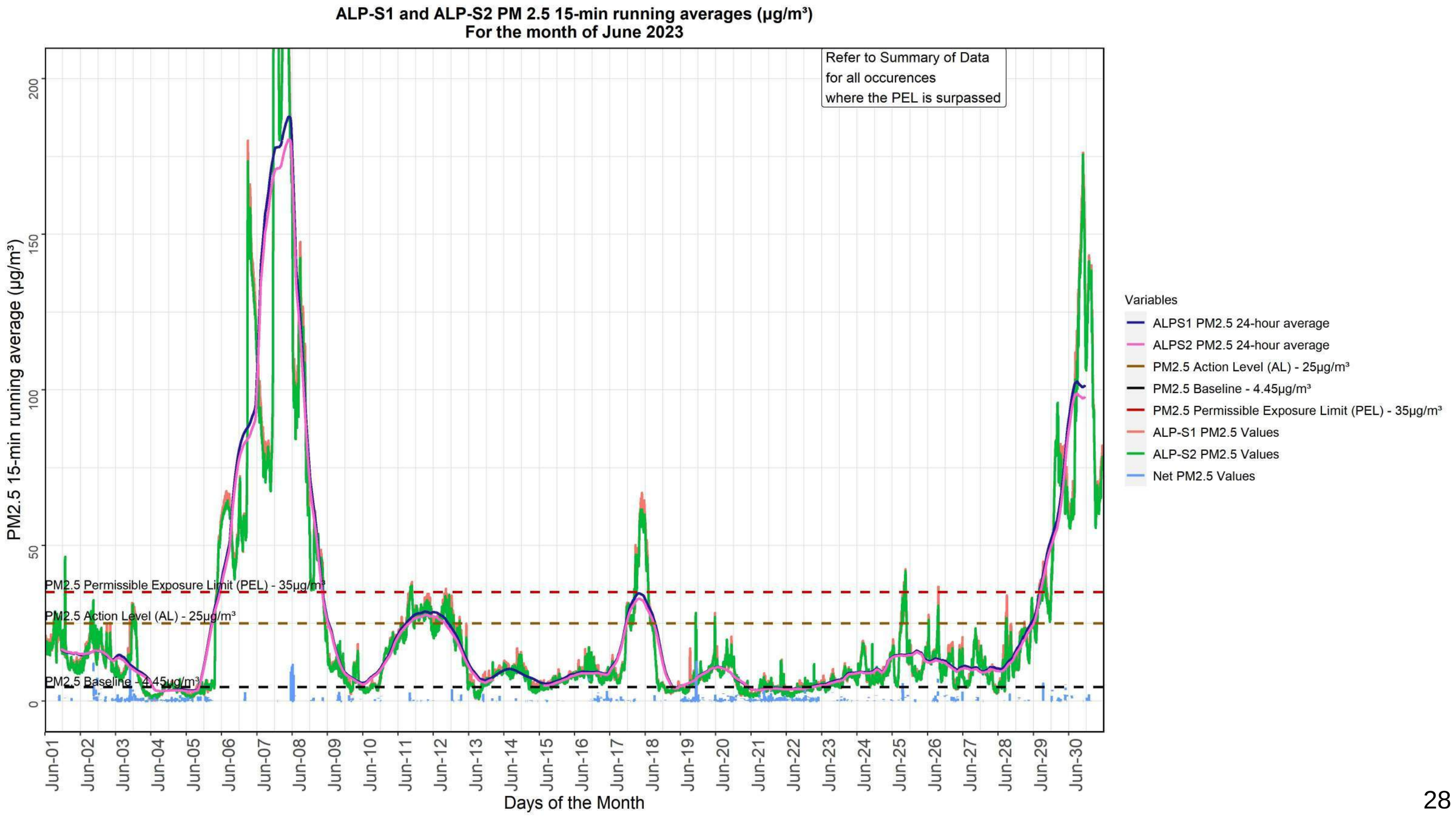
Mitigation Measures

- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

Canadian Wildfire Impacts

- From June 5th through June 9th and June 29th through June 30th, particulates from wildfires burning in the northern Canadian provinces impacted air quality city and state-wide. Impacts from the Canadian wildfires was observed at the air quality monitors present throughout the SANDRESM2 project site causing the 24-hour TWA to exceed the allowable project limits. Site-wide construction was halted midday on June 7th and resumed once city-wide air quality improved on June 9th in order to protect worker and community health and safety. The Canadian wildfire impacts were noted in the June 2023 Air Quality Monitoring Report submitted by the contractor and presented to the Community Action Group (CAG).

JUNE 2023 DATA PLOTS


ALP-S1 and ALP-S2 PM 2.5 15-min running averages (µg/m³)
For the month of June 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM2.5 15-min running average (µg/m³)
0
50
100
150
200
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 4.45µg/m³
Jun-01
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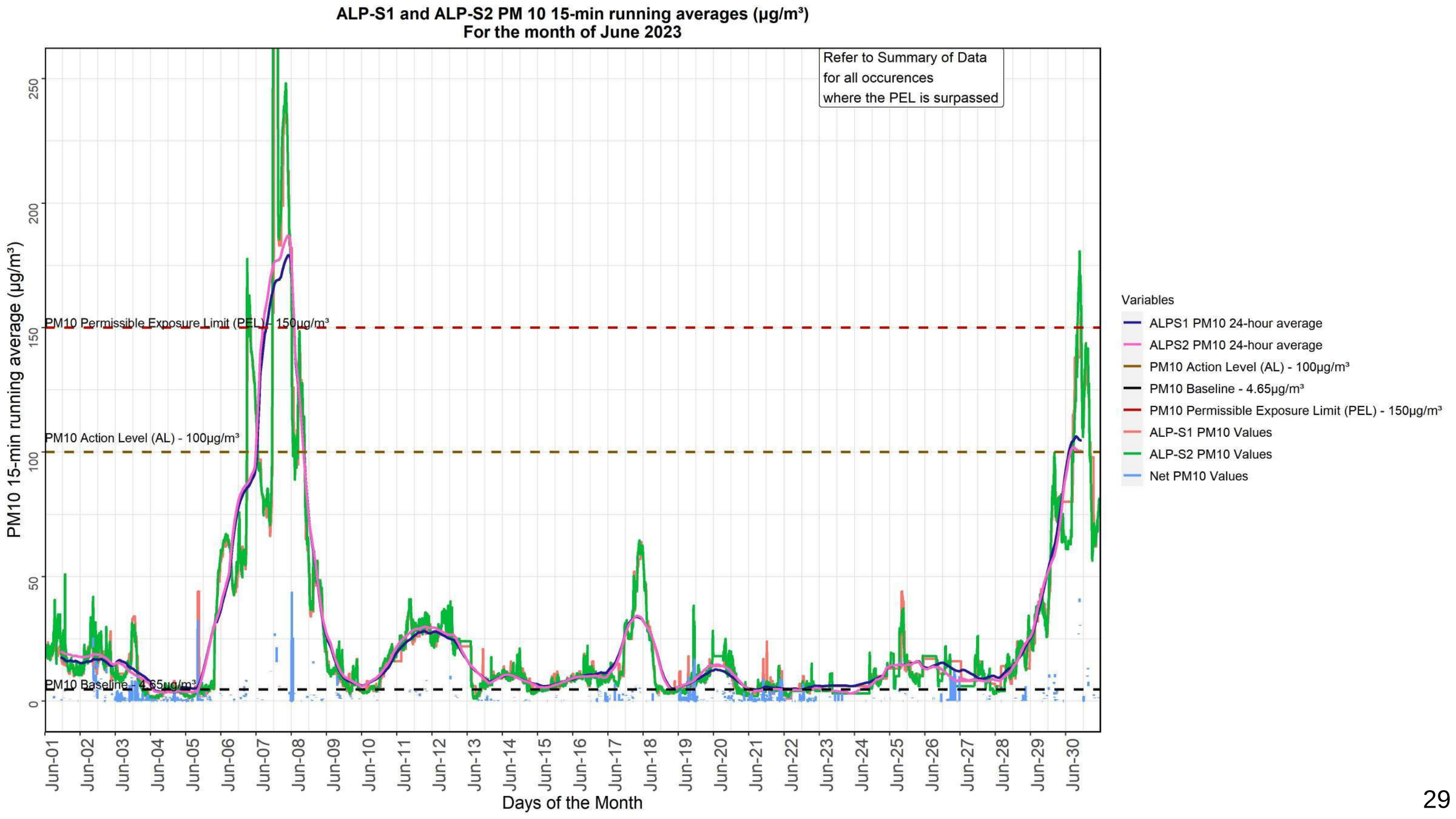
Jun-29
Jun-30
Days of the Month
Variables
ALPS1 PM2.5 24-hour average
ALPS2 PM2.5 24-hour average
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 4.45µg/m³
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
ALP-S1 PM2.5 Values
ALP-S2 PM2.5 Values
Net PM2.5 Values


ALP-S1 and ALP-S2 PM 10 15-min running averages (µg/m³)
For the month of June 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM10 15-min running average (µg/m³)
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 4.65µg/m³
0
50
100
150
200
250
Jun-01
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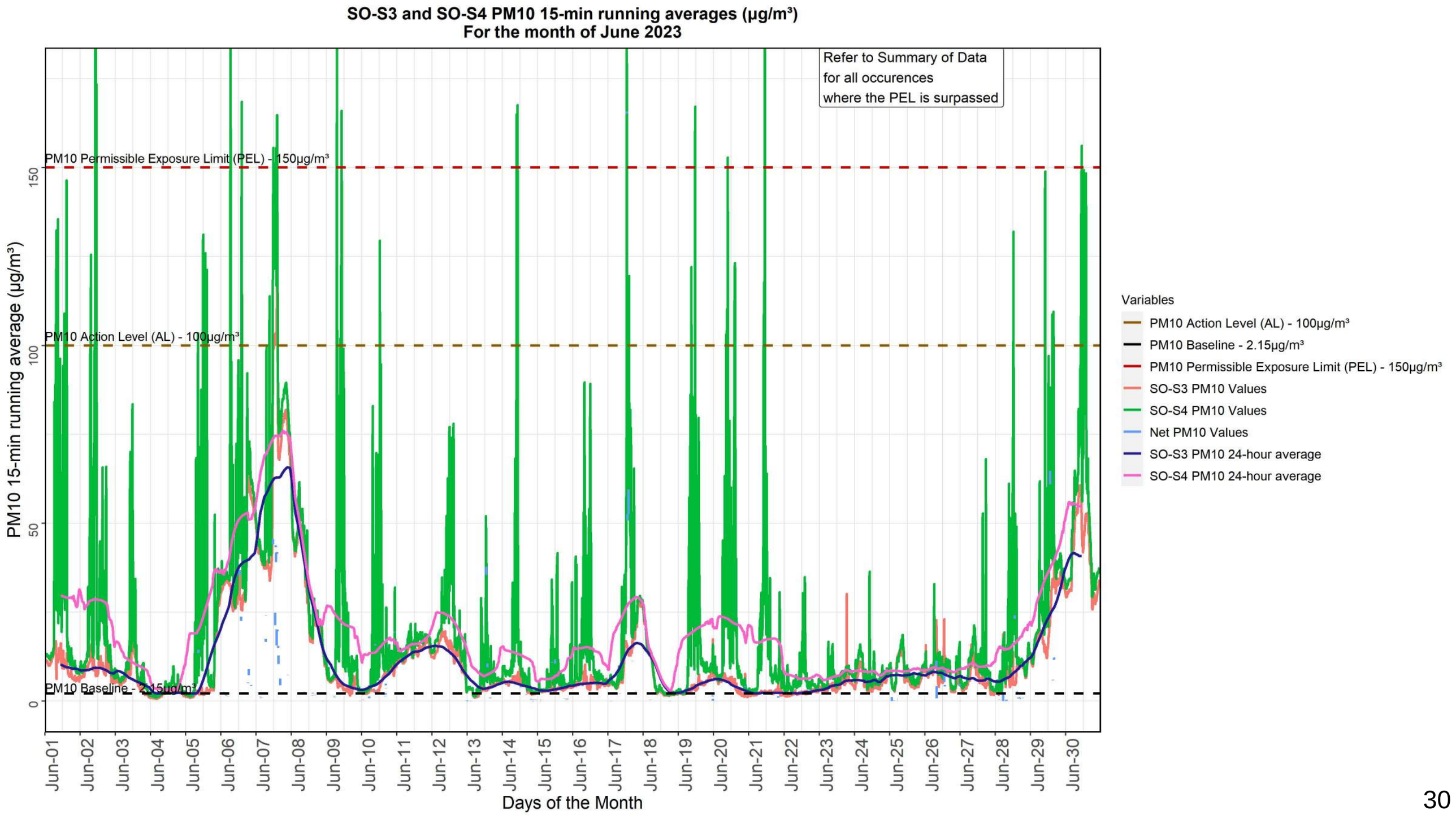
Days of the Month
Variables
ALPS1 PM10 24-hour average
ALPS2 PM10 24-hour average
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 4.65µg/m³
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
ALP-S1 PM10 Values
ALP-S2 PM10 Values
Net PM10 Values


SO-S3 and SO-S4 PM10 15-min running averages (µg/m³)
For the month of June 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 2.15µg/m³
PM10 15-min running average (µg/m³)
0
50
100
150
Jun-01
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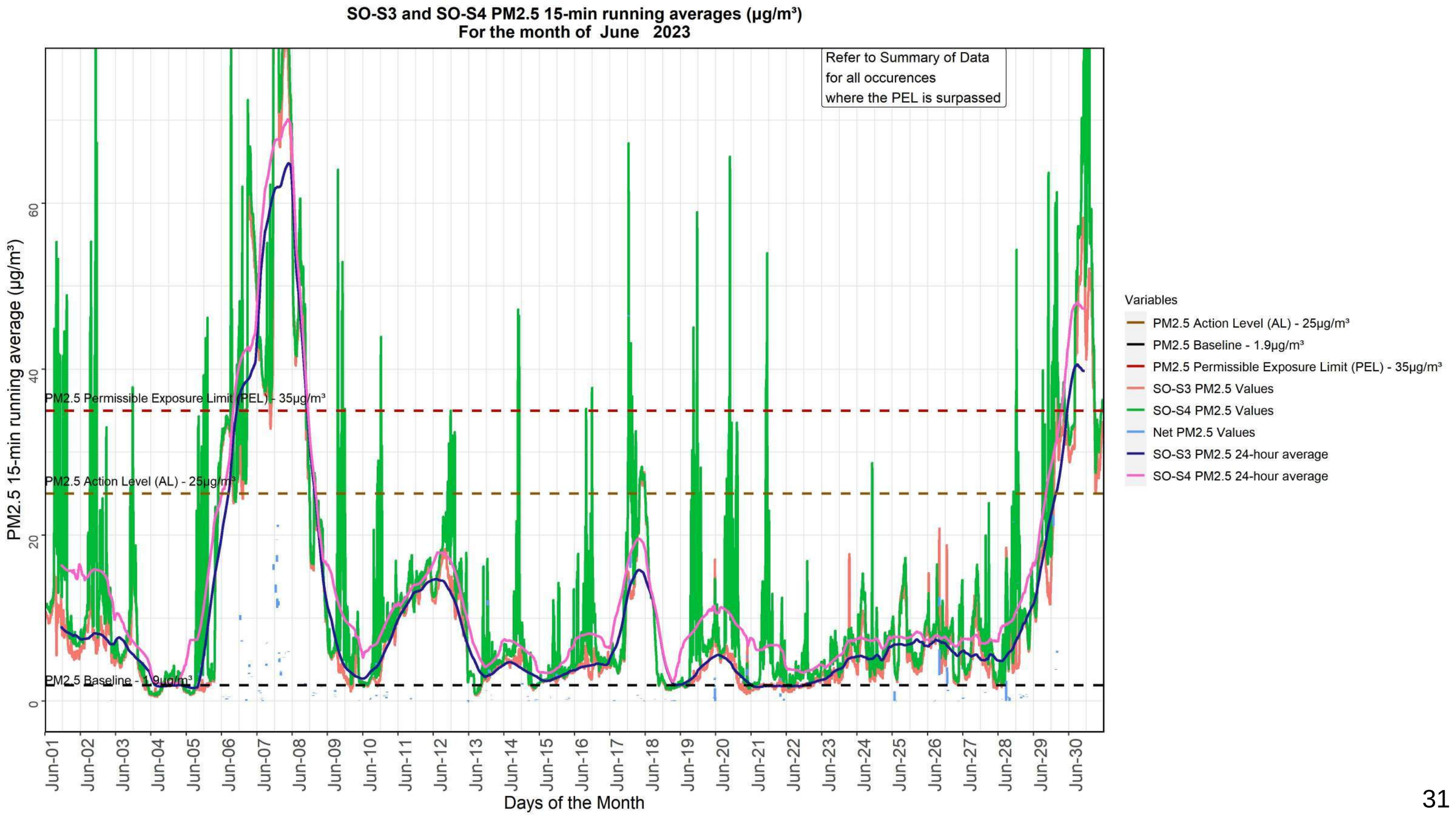
Jun-30
Days of the Month
Variables
PM10 Action Level (AL) - 100µg/m³
PM10 Baseline - 2.15µg/m³
PM10 Permissible Exposure Limit (PEL) - 150µg/m³
SO-S3 PM10 Values
SO-S4 PM10 Values
Net PM10 Values
SO-S3 PM10 24-hour average
SO-S4 PM10 24-hour average


SO-S3 and SO-S4 PM2.5 15-min running averages (µg/m³)
For the month of June 2023
Refer to Summary of Data
for all occurences
where the PEL is surpassed
PM2.5 15-min running average (µg/m³)
0
20
40
60
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 1.9µg/m³
Jun-01
Jun-02
Jun-03
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Days of the Month
Variables
PM2.5 Action Level (AL) - 25µg/m³
PM2.5 Baseline - 1.9µg/m³
PM2.5 Permissible Exposure Limit (PEL) - 35µg/m³
SO-S3 PM2.5 Values
SO-S4 PM2.5 Values
Net PM2.5 Values
SO-S3 PM2.5 24-hour average
SO-S4 PM2.5 24-hour average

APPENDIX

I. Project Area 2 Phasing

Project Area 2
The construction in Project Area 2 will occur in three main phases from north to south and will be staggered to minimize open space impacts. The construction timeline will be broken down as follows by area (subject to change):

- **Phase I:** ALP Flood Wall/Gates and Park Restoration: **Early 2021 to Mid-2022**
- **Phase I:** Stuyvesant Cove Park: SO Flood Wall and Gate: **Early 2021 to Mid-2023**
- **Phase II & III:** Stuyvesant Cove Park Flood Wall and Restoration: **Mid-2021 to Mid-2024**
  ***Construction of Stuyvesant Cove Park will occur in phases, starting with closures from East 20th Street northwards and moving to the southern end of the park upon completion of the northern side.
- **Phase IV:** Murphy Brothers Playground Flood Wall and Restoration: **Late 2022 to Late 2024**

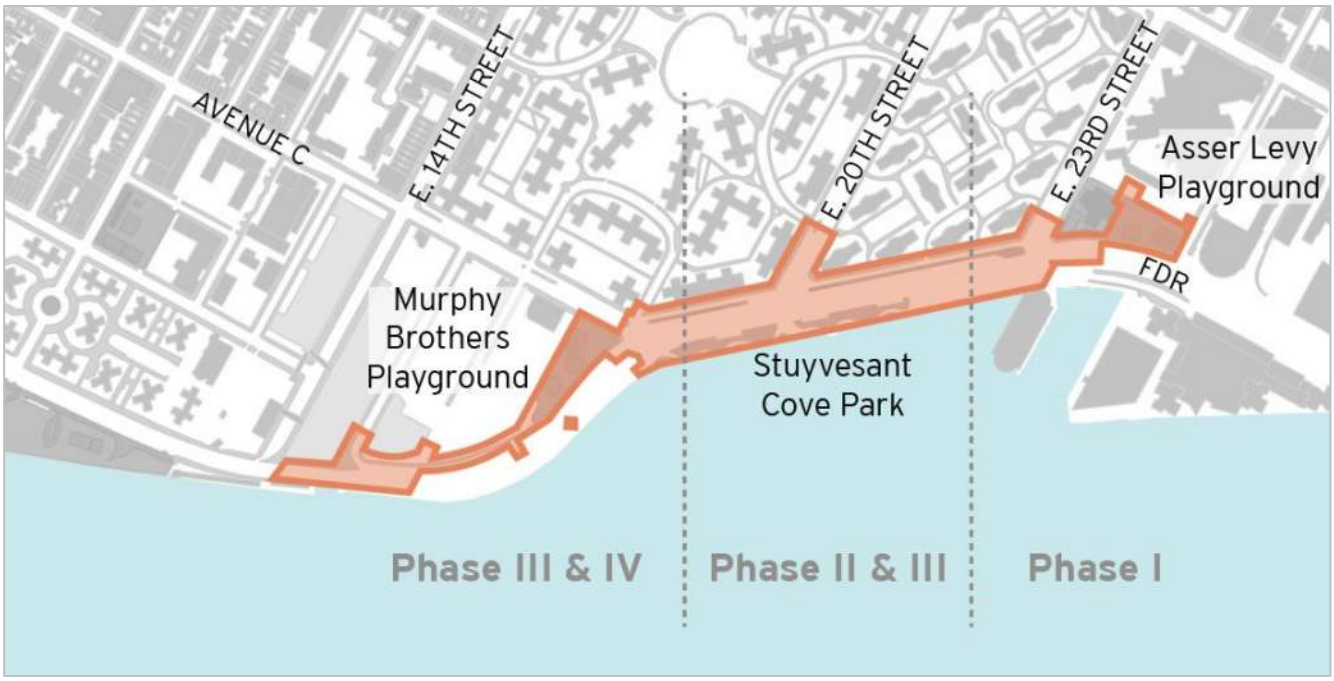

Fig.4 East Side Coastal Resiliency **Project Area 2** Proposed Phasing (subject to change)

II. ESCR Air Quality Management Program

Community health and safety is of utmost importance to the City of New York, NYC Department of Design and Construction (DDC), and the ESCR Team. The ESCR Team is implementing a multi-level approach to Air Quality Management with includes:

- Step 1: Air Quality Management Plan
- Step 2: Daily Air Quality Mitigation Techniques
- Step 3: Daily AQM
- Step 4: Air Quality oversight by environmental specialists

Step 1: The Air Quality Management Plan
The Air Quality Management Plan is submitted at the start of the project to outline the management of air quality for the project. It includes contractor roles and responsibilities, mitigation techniques, and action plans. This Plan is reviewed and approved by the Program Management / Construction Management (PMCM) Team HNTB-LiRo-Joint Venture, and DDC.

Step 2: Daily Air Quality Mitigation Techniques
As mentioned in Chapter 6.6 of the FEIS, Construction-Hazardous Materials Section "Dust management during soil-disturbing work would include the following: (1) use of water spray for roads, trucks, excavation areas and stockpiles; (2) use of anchored tarps to cover stockpiles; (3) use of truck covers during soil transport within site limits and during off-site transport; (4) employment of extra care during dry and/or high-wind periods; (5) use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface; and (6) use of a truck wheel wash at site access/egress points to prevent fugitive dust and off-site migration of dust and other particulates. The source(s) of any dust emissions would be identified and addressed immediately and appropriately.

Step 3: Daily Air Quality Monitoring
The air quality monitoring confirms the daily mitigation techniques in place are being implemented and are effective. Action levels are set to alert the contractor when a technique is not working, and adjustments are required to maintain the levels as set by the NAAQS for PM pollution as mentioned above. Step 3 is implemented daily and mitigation techniques will vary depending on work activities. The EPA Standard TWA for analyzing PM levels is 24hours, the ESCR project is analyzing levels more frequently at 15min TWA.

Step 4: Air Quality Oversight by Environmental Specialists
The oversight for environmental monitoring for the ESCR project is multi-tiered and includes relationships between several agencies and entities. As shown in the exhibit on the following page, a series of checks and balances have been implemented to assure compliance with environmental regulations. See *Fig. 5 East Side Coastal Resiliency Air Quality Monitoring Flow Chart*

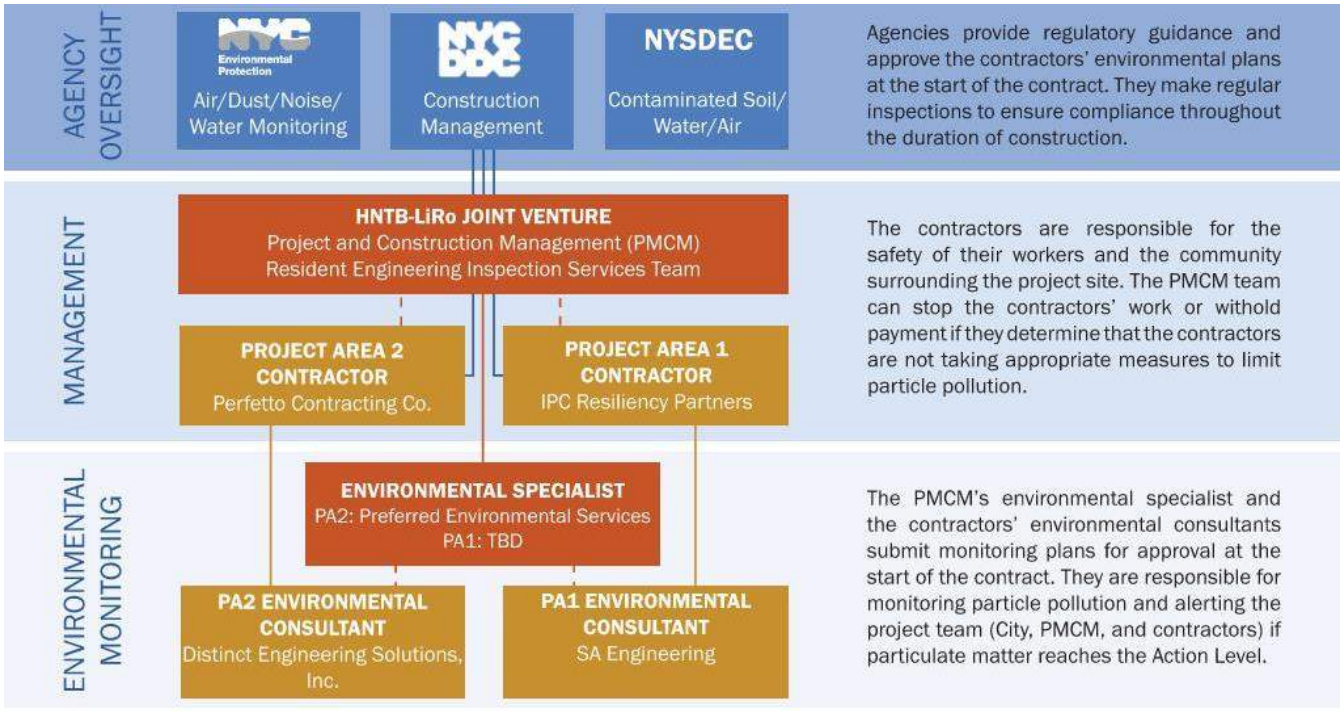

Fig.5 East Side Coastal Resiliency Air Quality Monitoring Flow Chart

III. RESOURCES

- ESCR Website: https://www1.nyc.gov/site/escr/index.page
- ESCR Environmental Review Process web page: https://www1.nyc.gov/site/escr/about/environmental-review.page
- FEIS Chapter 5.7 Hazardous Materials: https://www1.nyc.gov/assets/escr/downloads/pdf/FEIS/ESCR-EIS-Chapter-5.7-Hazardous-Materials.pdf
- FEIS Chapter 6.6 Construction Hazardous Materials: https://www1.nyc.gov/assets/escr/downloads/pdf/FEIS/ESCR-EIS-Chapter-6.6-Construction-Hazardous-Materials.pdf
- EPA Particulate Matter (PM) Pollution - Particulate Matter (PM) Basics: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM
- EPA Particulate Matter (PM) Pollution - Setting and Reviewing Standards to Control Particulate Matter (PM) Pollution: https://www.epa.gov/pm-pollution/setting-and-reviewing-standards-control-particulate-matter-pm-pollution
- EPA Particulate Matter (PM) Pollution - National Ambient Air Quality Standards (NAAQS) for PM: https://www.epa.gov/pm-pollution/national-ambient-air-quality-standards-naaqs-pm
- EPA Particulate Matter (PM) Pollution - Applying or Implementing Particulate Matter (PM) Standards: https://www.epa.gov/pm-pollution/applying-or-implementing-particulate-matter-pm-standards